

cannot be regarded as a defensive weapon, might easily have been overlooked, and the smoothness of the skin would give it a greater resemblance to the horse than any other animal.

This paper is accompanied by two plates, exhibiting the skull of the African and of the fossil Siberian rhinoceros, and a fossil horn of the latter.

Extract of a Letter from Captain Basil Hall, R.N. F.R.S. to William Hyde Wollaston, M.D. V.P.R.S. containing Observations of a Comet seen at Valparaiso. Read January 10, 1822. [Phil. Trans. 1822, p. 46.]

The comet described in Captain Hall's letter was visible for 33 days in the months of April and May, 1821. During the first week its nucleus was bright and distinct; but being then in the interior of the country, he did not commence observing it till the 8th of April, when its nucleus had become so indistinct as to render its measurement by the micrometer uncertain. On its first appearance, the comet appeared of a dull white, and its tail presented a dark streak between its sides, giving it the appearance of being split. On the second evening the tail subtended an angle of 7° , reaching to ρ Ceti; on the seventh the nucleus was less bright, and the tail shorter, arising, probably, from the increased distance of the comet. The tail was at first nearly at right angles to the horizon, but each succeeding night it inclined more to the south. Tables of the observations and some sketches of the appearance of this comet accompany Captain Hall's communication.

Elements of Captain Hall's Comet. By J. Brinkley, D.D. F.R.S. and M.R.I.A. and Andrews Professor of Astronomy in the University of Dublin. In a Letter addressed to W. H. Wollaston, M.D. V.P.R.S. Read January 10, 1822. [Phil. Trans. 1822, p. 50.]

Dr. Brinkley remarks that the comet observed by Captain Hall is interesting to astronomers on account of its small perihelion distance, for there are only three, out of 116, in M. Delambre's catalogue, that pass nearer to the sun. On the 8th of April it was distant from the earth 1.41, and on the 3rd of May, 2.64, the sun's distance from the earth being unity.

Dr. Brinkley also remarks that it is probably the same comet that was observed in 1593; it agrees with that in its small perihelion distance, and great inclination. Of that comet, the inclination was 88° , and the perihelion distance .089; of this, the inclination is $106^{\circ} 44'$, and its perihelion distance .093.

To the proximity of this comet to the sun, when on the north side of the ecliptic, in February and March last, before it passed its perihelion, Dr. Brinkley attributes its having escaped European observers. It was never more than a few degrees from the sun, and therefore could not have been visible. The author then points out

the unusual circumstances relative to this comet, which have involved the computation of its elements in difficulties not often met with, and which induce him to request Dr. Wollaston to lay the method by which he proceeded before the Royal Society.

On the Electrical Phenomena exhibited in Vacuo. By Sir Humphry Davy, Bart. P.R.S. Read December 20, 1821. [*Phil. Trans.* 1822, p. 64.]

The relations of electricity to space, as nearly void of matter as it can be made on the earth's surface, are connected with many important queries bearing upon the nature of heat, light, electricity, and magnetism.

The vacuum used by Sir Humphry Davy was that above the mercury in the barometer tube, and a more perfect one produced in the same way by fused tin; the former he found always permeable to electricity, but the colour and intensity of the light in traversing the mercurial atmosphere was remarkably affected by its temperature; it became green and vivid when the tube was heated, and was scarcely perceptible in a very dark room, when it was cooled to 0° ; which phenomena, as well as some others described by the author, are referable to the varying density of the mercurial vapour. The admission of a little air rendered the light blue, and improved the conducting power of the medium. The most perfect vacuum that could be obtained above fused tin, was also permeable to electricity; but the light was yellow and exceedingly pale, and only slightly increased by heat. Electric and magnetic repulsions and attractions took place in the mercurial vacuum, as in air;—a circumstance which shows, says Sir Humphry, that they are not dependent upon elastic ponderable matter, and point them out as primary causes of other electrical phenomena.

From the aggregate results of his researches, the author thinks it evident that the light, and probably the heat, generated in electrical experiments, depend principally upon some properties or substances belonging to the ponderable matter through which it passes, and they render it probable that it is entirely owing to this source.

Croonian Lecture. On the Anatomical Structure of the Eye; illustrated by Microscopical Drawings, executed by F. Bauer, Esq. By Sir Everard Home, Bart. V.P.R.S. Read November 15, 1821. [*Phil. Trans.* 1822, p. 76.]

Having ascertained, by the aid of Mr. Bauer's microscopical observations, that neither the marsupium nor the ciliary processes are muscular, and therefore inadequate to those adjustments of the crystalline lens requisite for distinct vision; and that the structure of the choroid coat is also membranous,—the author turned his attention to the structure of the iris, which in the human eye resembles that of the quadruped developed by Mr. Maunoir in his Treatise on the